REMARKS

Claims 1-26 are pending in the present application. Claims 2 and 15 are amended herein. Reconsideration of the claims is respectfully requested.

Claims 2 and 15 have respectively been amended to recite that the memory buffer device and memory buffer controller are connected to the source data link through a data bridge input port, and further connected between the source data link and the target data link. This amendment is clearly disclosed in Applicant's specification, such as at page 10, line 20-page 11, line 3 and **Figure 2**. **Figure 2** shows buffer RAM memory **210** and buffer DMA controller **208** connected between a source data link such as transceiver **214**, and a target data link such as transceiver **216**. Both memory **210** and controller **208** are shown to be connected to source data link **214** through input ports **206** of data bridge **202**.

Applicant filed a Response to Office Action in regard to the above application with the USPTO on November 1, 2004. Comments and remarks set forth in that Response are incorporated herein by reference.

I. 35 U.S.C. § 102, Anticipation

The Examiner has rejected Claims 1-5, 10-18, and 23-26 under 35 U.S.C. § 102 as being anticipated by U.S. Patent No. 6,356,944, to McCarty. This rejection is respectfully traversed.

II. 35 U.S.C. § 103, Obviousness

The Examiner has rejected Claims 6 and 19 under 35 U.S.C. § 103 as being unpatentable in view of McCarty combined with U.S. Patent No. 6,367,033, to Jibbe. The Examiner rejected Claims 7-9 and 20-22 under 35 U.S.C. § 103 in view of McCarty combined with Jibbe and U.S. Patent No. 5,805,924, to Stoevhase. These rejections are respectfully traversed.

III. Applicant's Invention

Applicant, in making his invention, sought to provide benefits and improvements in directly connecting a plurality of hosts to a single fibre channel (FC). This purpose of Applicant is set forth in his specification, such as at page 5, lines 3-11:

> The present invention provides an apparatus and method by which to directly connect a plurality of hosts to a single fibre channel (FC) link without the need of an external switch. This provides connectivity benefits in which the hosts are using only a portion of the link bandwidth. Hardware may be used to allow the hosts to transparently share the FC link into an FC controller. This hardware may acts as a FC frame multiplexer/demultiplexer with buffering capability.

Applicant achieves his intended purpose, at least in part, by providing the embodiment of his invention recited by Claim 1:

> 1. A method in a data processing system for transferring data from a plurality of host data links to at least one local data link, the method comprising the steps of:
>
> initializing a data bridge, wherein the data bridge is functionally connected on a first end to the plurality of host data links and on a second end to the at least one local data link;
>
> determining if a first data link within the plurality of host data links and a second data link within the at least one local data link initiate a login parameter; and
>
> automatically transferring the data from a source data link within the plurality of host data links to a target data link within the at least one local data link based on the login parameter, wherein the data transferred from the source data link is stored in a memory buffer device, and wherein the memory buffer device is connected to the data bridge.

IV. Analysis of Claim 1

A prior art reference anticipates a claimed invention under 35 U.S.C. § 102 only if every element of the claimed invention is identically shown in that single reference, arranged as they are in the claims. *In re Bond*, 910 F. 2d 831, 832, 15 U.S.P.Q. 2d 1566, 1567 (Fed Cir. 1990). All limitations of the claimed invention must be considered when determining patentability. *In re Lowry*, 32 F. 3d 1579, 1582, 21 U.S.P.Q. 2d 1031, 1034 (Fed Cir. 1994). Anticipation focuses on whether a claim reads on the product or process a prior art reference discloses, not on what the reference broadly teaches. Kalman v. Kimberly-Clark Corp., 713 F. 2d 760, 218 U.S.P.Q. 781 (Fed Cir. 1983).

After reviewing the cited McCarty reference and comparing the teachings thereof with Applicant's Claim 1, Applicant respectfully submits that McCarty does not teach every element of Claim 1, arranged as they are therein. Specifically, McCarty does not teach the following features or limitations now recited by Claim 1, in the combination thereof:

> (1) Initializing a data bridge connected on a first end to a plurality of host data links and on a second end to at least one local data link. (Hereinafter "Feature (1)")
> (2) Determining if a first data link within the plurality of host data links, and a second data link within at least one local data link, initiate a login parameter. (Hereinafter "Feature (2)")
> (3) Transferring data from a source data link (within the plurality of host data links) to a target data link (within the at least one local data link), wherein the data transferred from the source data link is stored in a memory buffer device connected to the data bridge. (Hereinafter "Feature (3)")

In rejecting Applicant's Claim 1, the Examiner stated the following:

> 4. As to claims 1 and 14, McCarty discloses a method and apparatus in a data processing system (492, Figure 3C) for transferring data from a plurality of host data links (N_Ports) to at least one local data link (440), the method and apparatus comprising the steps of:
>
> Initializing a data bridge (McCarty teaches of a data bridge (430 of Figure 3C), where the bridge is responsible for routing data, error detection and correction, and flow control, Col. 8, lines 4 – 7. The flow control is a component of the initialization process where service parameters and a common operating system are established. (Col. 8, lines line – Col. 9 line 3), where the data bridge (430) is functionally connected on a first end to the plurality of host data links (435)and on a second end to the at least one local data link (436); determining if a first data link (any N_Port) within the plurality of host data links and a second data link (440) within the at least one local data link initiate a login parameter; (McCarty teaches that the data link devices must login to each other before commencing a transaction (Col. 8, lines 57 – 64.)
> And automatically transfer the data from a source data link (any N_Port) within the first plurality of data links (N_Ports) to a target data link (440) within the at least one local data link based on the login parameter, wherein the data transferred from the

> source data link is stored in a memory buffer device, and wherein the memory buffer device is connected to the data bridge. (McCarty teaches of transferring data from an initiator 410 to a target 415 in figure 4A. When the target is ready to accept data, a signal is sent back to the initiator, (step 425) that initiates the data transfer to the target. It is inherent that the initiator comprises of a memory buffer to afford data transfer. This buffer would be connected to the data bridge, which couples the initiator and the target. (Col. 10, lines 6 – 24). (Emphasis added)

Office Action, February 15, 2005, pages 2-3.

In the above statement, the Examiner refers to **Figure 3C** of McCarty and to fabric **430** thereof as showing a data bridge. The Examiner further refers to col. 8, lines 4-7, which pertain to **Figure 3C**, and to items **436** and **440** shown therein, which are taught to be an F_Port **436** and an N_Port **440**, respectively.

In regard to Feature (1) of Applicant's Claim 1, pertaining to initializing the data bridge, it appears that the only citation to McCarty by the Examiner was "(col. 8, lines line – col. 9, line 3)". While the line number for col. 8 is not specified, Applicant has observed that there is no reference to initialization in column 8 of McCarty until col. 8, line 59, which refers to "a Loop Initialization Process". At col. 8, line 59-col. 9, line 3, McCarty is clearly providing teachings in regard to **Figure 3B** thereof, and not **Figure 3C**.

With regard to Feature (2) of Applicant's Claim 1, directed to determining whether first and second data links have initiated a login parameter, the Examiner has only cited col. 8, lines 57-64 of McCarty. This section likewise pertains to **Figure 3B** of McCarty, not **Figure 3C**.

The above Feature (3) of Claim 1 is directed to transferring data from a source data link to a memory buffer device that is connected to the data bridge. In regard to this Claim 1 feature, the Examiner has cited col. 10, lines 6-24 of McCarty, **Figure 4A**, and items **410**, **415** and **425** shown therein.

V. Response to Rejection of Feature (1) and Feature (2) of Claim 1

It is very well established that a prior art reference must be considered in its entirety, including portions that lead away from the claimed invention. This is clearly stated at **MPEP2141.03.** Thus, McCarty teaches, at col. 1, lines 10-11, that its purpose is to provide "a system and method for increasing write performance in a Fibre Channel (FC) Environment." Moreover, at col. 7, lines 47-49, McCarty states the following:

> Referring now to FIGS. 3A–3C, three exemplary topological configurations are shown, generally at **490, 491,** and **492,** respectively, into which the FC Nodes may be arranged.

It is thus seen that McCarty teaches three embodiments or arrangements of its invention. The arrangement **490,** shown in **Figure 3A,** is discussed in only one paragraph of McCarty, at col. 7, lines 59-65. Arrangement **492**, shown in **Figure 3C,** is described in only two paragraphs, at col. 7, line 66-col. 8, line 19. **Figure 3C** is the only figure of McCarty cited by the Examiner to show a data bridge.

At col. 8, lines 52-54, McCarty states that arrangement **491**, shown in **Figure 3B**, is the "presently preferred exemplary embodiment of the present invention." Accordingly, the arrangement **491** embodiment is discussed extensively in McCarty, from col. 8, line 20 through col. 10, line 5. **Figure 3B** of McCarty, showing the arrangement **491**, as well as col. 8, lines 20-33 describing essential features thereof, are respectively set forth below:

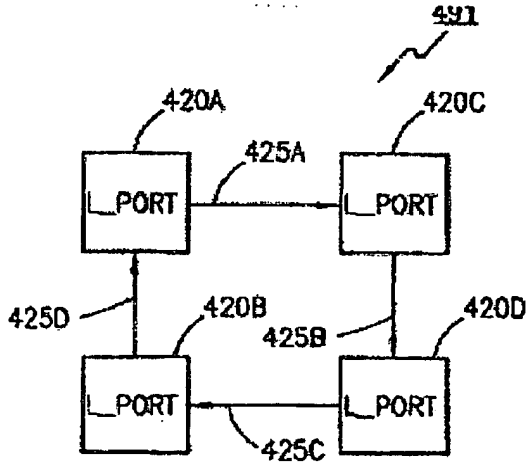

FIG. 3B

> Reference numeral 491 denotes a loop topology known in the art as an Arbitrated Loop (AL) pursuant to a connection standard referred to as the FC-AL standard. The loop topology **491** interconnects a plurality of FC devices or Nodes (denoted as loop ports or L_Ports) such as, for example, L_Ports **420A** through **420D**, via links **425A** through **425D**. Thus, this connection arrangement enables each device to use the loop topology **491** as a point-to-point connection between a sender and a receiver, irrespective of any intermediate devices disposed therebetween which merely act as "repeaters."
>
> The arbitrated loop 491 provides a low-cost means of attaching multiple devices without the need for hubs or switches. (Emphasis added)

The above teachings of McCarty disclose an arrangement **491** that comprises a number of loop ports, or "L_Ports", that are connected to one another to form a closed loop. This arrangement is referred to as an "Arbitrated Loop", associated with an "FC-AL" standard. It is very apparent that loop arrangement **491** of **Figure 3B** fails to include a data bridge, as recited by Applicant's Claim 1, nor does it have any need for such data bridge. In fact, McCarty states at col. 8, lines 31-33 that the loop **491** does not need switches. On the other hand, McCarty teaches at col. 7, lines 66-67 that the arrangement **492** is a "switched fabric topology". Thus, McCarty teaches that loop arrangement **491** is to be preferred over its own arrangement **492**, having a fabric **430**. This strongly infers that McCarty's loop arrangement **491** and teachings in regard thereto are not intended to include either fabric **430** or the data bridge of Applicant's Claim 1.

As discussed above, it appears to Applicant that the only citations of Examiner in regard to Features (1) and (2) of Claim 1, pertaining to initializing a data bridge and login of data links connected to a data bridge, are at col. 8, line 59-col. 9, line 3 and col. 8, lines 57-64 of McCarty. The portion of McCarty at col. 8, line 52 through col. 9, line 14, which includes both these cited sections, is set forth below:

> Because the presently preferred exemplary embodiment of the present invention preferably encompasses an FC-AL topology, such as the loop topology **491**, the general operation of this nodal configuration will be described in greater detail hereinbelow.
>
> It is known that the FC-AL standard allows each FC device to negotiate for an Arbitrated Loop Physical Address (AL_PA) in a Loop Initialization process. While participating on an Arbitrated Loop, the FC devices must log in to each other before commencing a loop transaction. The login procedure is the initial procedure all communicating Nodes go through to establish service parameters and a common operating environment. One of the examples of service parameters is a "credit" limit, which represents the maximum number of outstanding frames that can be

> transmitted by a Port without causing a buffer overrun at the receiving Port. As can be seen, credit is a flow control mechanism that throttles link traffic by limiting the number of frames each originator Port can send. In conventional FC controllers, two types of credit are typically used: buffer-to-buffer credit (BB_Credit) and end-to-end credit (EE_Credit).
>
> If a device is not logged in to another device, it will discard any frames it receives from that device until it is logged in. Since an initiator or driver must be able to manage the target device with which it is communicating, the initiator keeps track of an FC-specific identity triplet for that target device. This FC-specific ID triplet comprises a target's Node_Name, it's Port_Name, and it's AL_PA. While the AL_PA is dynamically assigned upon a loop reset, the Node_Name and Port_Name are formed from the device's unique World_Wide_Name. (Emphasis added)

It is readily apparent that all teachings in the above portion of McCarty are intended to pertain only to the Arbitrated Loop arrangement **491**, shown in **Figure 3B**. Moreover, McCarty provides no explanation, or even a suggestion, as to how any of such teachings, and particularly those in regard to initialization and login, would apply to a fabric **430**, or to a data bridge as recited by Applicant's Claim 1. Accordingly, none of the above teachings of McCarty shows or suggests either Feature (1) of Claim 1, (i.e. initializing a data bridge connected between host and local data links) or Feature (2) thereof (i.e. determining login between first and second of such data links connected to the data bridge). In view of the above, Applicant respectfully submits that McCarty does not teach each and every element of Claim 1.

VI. Response to Rejection of Feature (3) of Claim 1

Feature (3) of Applicant's Claim 1 is directed to a source data link, a target data link, a data bridge connected therebetween, and a memory buffer device connected to the data bridge for storing data that has been transferred from the source data link. Col. 10, lines 6-24 and **Figure 4A** of McCarty, cited in rejecting elements of Feature (3), is set forth below:

> Referring now to FIG. **4A**, there is shown a scheme for a current methodology for effectuating a transaction to transfer data from an initiator **410** to a target **415**. Under this scheme, the FC initiator **410** first sends a WRITE command **400** usable in an FC Profile, for example, the FC-SCSI Profile. This is shown in the **FIG. 4A** as arrow path **405**. The initiator **410** then waits for a **TRANSFER READY** frame **420** to be sent back from the target **415**. After winning the loop arbitration for control, the
>
> target **415**, subsequently, sends this frame **420** to the initiator **410** to indicate that it is ready to receive some or all of the data the initiator **410** wants to send. This step is indicated in **FIG. 4A** by arrow path **425**.

Thereafter, by gaining loop control through arbitration, the initiator **410** can transmit (i.e., write) the **DATA** frame or frames **430** to the target **415**, as shown by arrow path **435**. Once all the data has been received, the target **415** will send a **STATUS** frame **440** to indicate to the initiator **410** that the **WRITE** command is now completed. (Emphasis added)

FIG. 4A

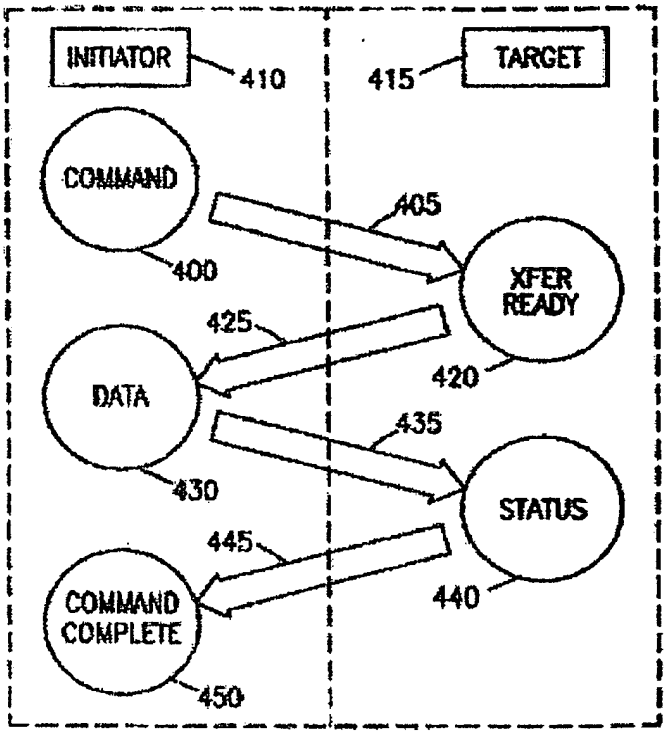

Figure 4A of McCarty shows an initiator **410**, target **415**, a WRITE command **400**, and other items pertaining to data exchange between initiator **410** and target **415**. To the extent there is any equivalence between Applicant's Claim 1 and the teachings of McCarty, initiator **410** would be equivalent to a source data link of Claim 1. In fact, the Examiner states that a source data link of Applicant's Claim 1 is equivalent to "any N_Port" of McCarty. At col. 7, lines 53-55, McCarty states explicitly that an N_Port is a hardware entity that "may act as an originator (that is, an initiator)".

Similarly, target **415** of **Figure 4A** may be equivalent to the target data link **415** of Claim 1. However, it is abundantly clear that **Figure 4A** of

McCarty in no way shows or suggests either a data bridge or a memory buffer device. In fact, McCarty states expressly, at col. 10, lines 13-14 and col. 10, line 19, that the teachings of **Figure 4A** are intended for loop arbitration **491**, not arrangement **492** that includes fabric **430**. However, even if fabric **430** was placed between initiator **410** and target **415**, McCarty would still fail to teach a memory buffer device connected to fabric **430**.

In the Office Action, the Examiner stated it to be inherent that the initiator comprises a memory buffer. Applicant respectfully but emphatically disagrees. McCarty explicitly teaches, at col. 1, lines 41-42, that initiators are "devices that engage in either channel or network communication." Applicant submits that many devices are available for engaging in such communications that are not memory buffer devices. Moreover, the disclosure at col. 10, lines 6-24 of McCarty does not require that initiator **410** be or include a memory buffer. The initiator could readily obtain data that is to be sent from somewhere else. However, even if initiator **410** was interpreted to be the memory buffer of Claim 1, **Figure 4A** of McCarty would then fail to show the source data link of Claim 1. Clearly, the same element of **Figure 4A** cannot be used to show two different and distinct components.

Moreover, Claim 1 recites that the data transferred from the source data link is transferred to the local data link. This same data, i.e. the data transferred from the source data link, is also stored in the memory buffer device. Since the memory device is connected to the data bridge, and the source and target links are coupled to different ends of the data bridge, the recitation of Claim 1 requires that the memory buffer must be connected between the source data link and the target data link, as shown by **Figure 2** of the application. **Figure 4A** of McCarty neither shows nor suggests any such configuration including a memory buffer device, even if teachings of **Figure 3B** were combined therewith.

The Jibbe and Stoevhase patents have been considered. However, neither of such references, either alone or in any combination with one another or McCarty, is considered to overcome the deficiencies of McCarty discussed above, in connection with Applicant's Claim 1.

VII. Response to Rejection of Claim 2

The Examiner stated the following in rejecting Applicant's Claim 2:

> As to claims 2 and 15, McCarty discloses a method and apparatus, where the data transferred from the source link is stored in a memory buffer device is connected to the data bridge via a memory buffer controller McCarty teaches of transferring data from an initiator 410 to a target 415 in figure 4A. When the target is ready to accept data, a signal is sent back to the initiator, (step 425) that initiates the data transfer to the target. It is inherent that the initiator comprises of a memory buffer to afford data transfer. This buffer would be connected to the data bridge, which couples the initiator and the target. Col. 10, lines 6-24).

Office Action, February 15, 2005, page 4.

With all due respect, Applicant does not understand from the above statement where **Figure 4A** and related text of McCarty shows or provides support for either the memory buffer device or memory buffer controller of Applicant's Claim 2. Such support is, of course, essential for a section 102 rejection. In any event, however, it is readily apparent that neither **Figure 4A** nor **Figure 3C** nor other teaching of McCarty shows or suggests the memory buffer device and memory buffer controller as now recited by Claim 2. Both the memory device and the controller are connected to the source data link through an input port of the data bridge, and are both connected between the source data link and the target data link. Accordingly, this recitation is considered to distinguish Claim 2 over McCarty, as well as over Jibbe and Stoevhase, which also fail to show such features.

Claim 2 depends from Claim 1, and thus additionally distinguishes over the art for the same reasons given in support thereof.

VIII. Response to Rejection of Claim 6

Applicant's Claim 6 depends from Claim 1, and is considered to distinguish over the cited art for the same reasons in support thereof.

In addition, Claim 6 is considered to distinguish over the cited art, particularly in reciting, in the over-all combination of Claim 6, determining whether an initiating sequence signal is received by both first and second data links, and establishing a data bridge active state if the initiating signal is received by both links.

The application, such as at page 6, line 29-page 7, line 11, teaches that the above recitation of Claim 6 is essential to the initialization process of Applicant's data bridge. Moreover, the application clearly indicates at page 6, line 30-page 7, line 2, that a local (second) link and an external (first) link may or may not receive a valid FC primitive sequence. Because of this very tentative situation, initialization of Applicant's data bridge absolutely requires the determining step of Claim 6.

The Examiner stated the following in rejecting Claim 6:

> 12. As to claims 6 and 19, McCarty does not disclose explicitly a method or apparatus to monitoring a signal from the first data link within a plurality of host data links and a signal from the second data link functionally connected to a data bridge. However, Jibbe teaches of a method and apparatus, to monitor a signal from first data link 105 (host-side monitor 125) within the plurality of host data links (host#1 - host#n) and a signal from the second data link (115) within at least one local data link functionally connected to the data bridge (110), COL. 6, lines 1- 11, figure 1;
> determining whether an initiating sequence signal is received by the first data link and the second data link;
> (Jibbe teaches of executing a program to establish data flow between first data link 105, and second data link 115 through an active data bridge 110. It would be obvious to one of ordinary skill in the art at the time of the invention that data bridge is active via host-side monitor 125, COL. 6, lines 1 – 11)
> And establish a data bridge (4) active state if the initiating sequence signal is received by the first data link and the second data link (Jibbe teaches of executing one or more host programs to establish an active data bridge(110) between first data link 105 and second data link 115. It would have been obvious to one of ordinary skill in the art at the time of the invention that these programs would appropriately configure the system. It would have been obvious at the time of the invention for one of ordinary skill in the art to combine the teaching of McCarty and

> Jibbe as Jibbe provides a means of testing and debugging a fibre channel system thus improving system ramp up time, COL. 1, lines 13 – 29).

Office Action, February 15, 2005, pages 6-7.

It appears from the above statement that the Examiner relied only on the Jibbe reference in rejecting specific features of Claim 6. In particular, the Examiner cited Figure 1 and col. 6, lines 1-11 of Jibbe, which is set forth as follows:

> In operation, computer system **100** executes one or more host programs, which give rise to a first data traffic flow observable from host-side monitor and analyzer **125**. This first traffic flow involves data transfers between host computers **105** and other devices such as disk array controllers **115** and **120**. These data transfers take place over a host-side interconnect which may preferably be implemented using a Fibre Channel compliant means as discussed above. The execution of one or more host programs also gives rise to a second data traffic flow observable from backside monitor and analyzer **140**. (Emphasis added)

Jibbe at col. 6, lines 1-2 states that execution of a host program gives rise to a first data traffic flow. Jibbe also states, at col. 6, lines 8-10, that execution of the host program "also gives rise to a second data traffic flow." Thus, the clear and explicit teaching of Jibbe is that execution of a host program always gives rise to both first and second data traffic flows. Thus, there is nothing uncertain or tentative in Jibbe as to whether first and second data flows will occur at the same time, in stark contrast to the teachings of Applicant. Accordingly, Jibbe has no need for the determining step of Claim 6, or for the feature thereof that active state is established only if both first and second data links are received. Applicant considers that the above language of Jibbe in fact teaches away from these features of Claim 6. In view of the clear and express teachings of Jibbe discussed above, Applicant respectfully requests that Jibbe be withdrawn as a reference against Claim 6, unless it is shown where Jibbe specifically teaches all the features recited by Claim 6.

IX. Response to Rejection of Remaining Claims

Claims 3 and 7-13 respectively depend from Claim 1, and are each considered to distinguish over the art for the same reasons given in support thereof. In addition, Claims 7-9 respectively depend from Claim 6, and are each considered to further distinguish over the art for the same reasons given in support thereof.

Independent Claim 14 contains patentable subject matter similar to that recited in Claim 1, and is considered to distinguish over the art for the same reasons given in support thereof.

Claim 15 depends from Claim 14, and is considered to distinguish over the art for the same reasons given in support thereof. In addition, Claim 15 recites patentable features similar to those of Claim 2, and is considered to further distinguish over the art for the same reasons given in support thereof.

Claim 19 depends from Claim 14, and is considered to distinguish over the art for the same reasons given in support thereof. In addition, Claim 19 recites patentable features similar to those of Claim 6, and is considered to further distinguish over the art for the same reasons given in support thereof.

Claims 16-18 and 20-26 respectively depend from Claim 14, and are each considered to distinguish over the art for the same reasons given in support thereof. In addition, Claims 20-22 respectively depend from Claim 19, and are each considered to further distinguish over the art for the same reasons given in support thereof.

X. Conclusion

It is respectfully urged that the subject application is patentable over the McCarty, Jibbe and Stoevhase references and is now in condition for allowance.

The Examiner is invited to call the undersigned at the below-listed telephone number if in the opinion of the Examiner such a telephone conference would expedite or aid the prosecution and examination of this application.

DATE: May 16, 2005

Respectfully submitted,

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